Curriculum Vitae

Changyo Han

Ph.D. in Information Science and Technology

HCI Researcher

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Employment History

2020 – · · · · **JSPS Postdoctoral Research Fellow**, The University of Tokyo

2019 – 2020 **JSPS Research Fellowship (DC2)**, The University of Tokyo

2013 – 2016 **Researcher**, Electronics and Telecommunications Research Institute (ETRI)

Education

2017 – 2020 **Ph.D. in Information Science and Technology, The University of Tokyo, Japan**
Thesis title: *Force Markers: Embossed Fiducials for Recognizing Physical Objects on Pressure-Sensitive Touch Surfaces.*

2011 – 2013 **M.E., The University of Tokyo, Japan**.

2007 – 2011 **B.E., Tokyo Institute of Technology, Japan**

Publications

Journal Articles

1. **Changyo Han** and Takeshi Naemura. "BumpMarker: a 3D-printed tangible marker for simultaneous tagging, tracking, and weight measurement". In: *ITE Transactions on Media Technology and Applications* 7.1 (2019), pp. 11–19. DOI: 10.3169/mta.7.11.

2. **Changyo Han**, Minkyu Sung, Seung-Hyun Cho, Hwan Seok Chung, Sun Me Kim, and Jong Hyun Lee. "Performance Improvement of Multi-IFoF-Based Mobile Fronthaul Using Dispersion-Induced Distortion Mitigation With IF Optimization". In: *Journal of Lightwave Technology* 34.20 (Oct. 2016), pp. 4772–4778. DOI: 10.1109/JLT.2016.2561297.

3. **Changyo Han**, Seung-Hyun Cho, Minkyu Sung, Hwan Seok Chung, and Jong Hyun Lee. "Clipping Distortion Suppression of Directly Modulated Multi-IF-over-Fiber Mobile Fronthaul Links Using Shunt Diode Predistorter". In: *ETRI Journal* 38.2 (Apr. 2016), pp. 227–234. DOI: 10.4218/etrij.16.2515.0038.

4. Seung-Hyun Cho, **Changyo Han**, Hwan Seok Chung, and Jong Hyun Lee. "Demonstration of Mobile Fronthaul Test Bed Based on RoF Technology Supporting Two Frequency Assignments and 2×2 MIMO Antennas". In: *ETRI Journal* 37.6 (Dec. 2015), pp. 1055–1064. DOI: 10.4218/etrij.15.0115.0146.

5. Minkyu Sung, **Changyo Han**, Seung-Hyun Cho, Hwan Seok Chung, and Jong Hyun Lee. "Improvement of the transmission performance in multi-IF-over-fiber mobile fronthaul by using tone-reservation technique". In: *Optics Express* 23.23 (Nov. 2015), p. 29615. DOI: 10.1364/OE.23.029615.

6. Sun Hyok Chang, Hwan Seok Chung, Roland Ryf, Nicolas K. Fontaine, **Changyo Han**, Kyung Jun Park, Kwangjoon Kim, Jyung Chan Lee, Jong Hyun Lee, Byoung Yoon Kim, and Young Kie Kim. "Mode- and wavelength-division multiplexed transmission using all-fiber mode multiplexer based on mode selective couplers". In: *Optics Express* 23.6 (Mar. 2015), p. 7164. DOI: 10.1364/OE.23.007164.

Conference Proceedings

1. Ryo Takahashi, Masaaki Fukumoto, **Changyo Han**, Takuya Sasatani, Yoshiaki Narusue, and Yoshihiro Kawahara. "TelemetRing: A Batteryless and Wireless Ring-shaped Keyboard using Passive Inductive Telemetry". In: *Proceedings of the 33rd Annual ACM Symposium on User Interface Software and Technology - UIST '20*. (accepted), Oct. 2020.

2. **Changyo Han**, Ryo Takahashi, Yuchi Yahagi, and Takeshi Naemura. "PneuModule: Using Inflatable Pin Arrays for Reconfigurable Physical Controls on Pressure-Sensitive Touch Surfaces". In: *Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems - CHI '20*. New York, NY, USA: ACM, Apr. 2020, pp. 1–14. DOI: 10.1145/3313831.3376838.

3. **Changyo Han**, Katsufumi Matsui, and Takeshi Naemura. "ForceStamps: Fiducial Markers for Pressure-sensitive Touch Surfaces to Support Rapid Prototyping of Physical Control Interfaces". In: *Proceedings of the Fourteenth International Conference on Tangible, Embedded, and Embodied Interaction - TEI '20*. New York, NY, USA: ACM, Feb. 2020, pp. 273–285. DOI: 10.1145/3374920.3374924.

4. Keisuke Shiro, Ryotaro Miura, **Changyo Han**, and Jun Rekimoto. "An Intuitive Interface for Digital Synthesizer by Pseudo-intention Learning". In: *Proceedings of the 14th International Audio Mostly Conference: A Journey in Sound - AM '19*. New York, NY, USA: ACM, Sept. 2019, pp. 39–44. DOI: 10.1145/3356590.3356598.

5. Seung-Hyun Cho, **Changyo Han**, Minkyu Sung, Hwan Seok Chung, Sun Me Kim, and Jong Hyun Lee. "Experimental Investigations of Uplink Transmission Performances in a Mobile Fronthaul based on IFoF Technique". In: *2016 International Conference on Information and Communication Technology Convergence (ICTC)*. IEEE, Oct. 2016, pp. 772–774. DOI: 10.1109/ICTC.2016.7763292.

6. Minkyu Sung, **Changyo Han**, Seung-Hyun Cho, Hwan Seok Chung, Sun Me Kim, and Jong Hyun Lee. "Bandwidth Efficient Transmission of 96 LTE-A Signals with 118-Gb/s CPRI-Equivalent Rate using 2-GHz Frequency Span and Intermixing Mitigation for Mobile Fronthaul". In: *2016 International Conference on Information and Communication Technology Convergence (ICTC)*. IEEE, Oct. 2016, pp. 775–777. DOI: 10.1109/ICTC.2016.7763293.

7. **Changyo Han**, Minkyu Sung, Seung-Hyun Cho, Hwan Seok Chung, Sun Me Kim, and Jong Hyun Lee. "Impact of Dispersion-Induced Second-Order Distortion in Multi-IFoF-based Mobile Fronthaul Link for C-RAN". In: *Optical Fiber Communication Conference*. Washington, D.C.: OSA, 2016, Tu2B.4. DOI: 10.1364/OFC.2016.Tu2B.4.

8. **Changyo Han**, Seung-Hyun Cho, Hwan Seok Chung, and Jong Hyun Lee. "Linearity Improvement of Directly-Modulated Multi-IF-over-Fibre LTE-A Mobile Fronthaul Link Using Shunt Diode Predistorter". In: *2015 European Conference on Optical Communication (ECOC)*. IEEE, Sept. 2015, pp. 1–3. DOI: 10.1109/ECOC.2015.7342016.

9. Seung-Hyun Cho, Hwan Seok Chung, **Changyo Han**, Sangsoo Lee, and Jong Hyun Lee. "Experimental Demonstrations of Next Generation Cost-Effective Mobile Fronthaul with IFoF technique". In: *Optical Fiber Communication Conference*. Washington, D.C.: OSA, 2015, M2J.5. DOI: 10.1364/OFC.2015.M2J.5.

10. **Changyo Han**, Seung-Hyun Cho, Hwan Seok Chung, Sang Soo Lee, and Jonghyun Lee. "Experimental Comparison of the Multi-IF Carrier Generation Methods in IF-over-Fiber System Using LTE Signals". In: *2014 International Topical Meeting on Microwave Photonics (MWP) and the 2014 9th Asia-Pacific Microwave Photonics Conference (APMP)*. IEEE, Oct. 2014, pp. 311–314. DOI: 10.1109/MWP.2014.6994561.

11. Changyo Han, Hwan Seok Chung, Sun Hyok Chang, Kwangjoon Kim, and Jonghyun Lee. "Effect of rotational misalignment in phase-plate based mode multiplexer". In: *12th International Conference on Optical Internet 2014 (COIN)*. IEEE, Aug. 2014, pp. 1–2. DOI: 10.1109/COIN.2014.6950625.

12. Seung-Hyun Cho, Hwan Seok Chung, **Changyo Han**, Sangsoo Lee, and Jong Hyun Lee. "Investigaitons of EVM Performance Degradations caused by Nonlienarity in Mobile Fronthaul Architecture based on IFoF technology". In: *12th International Conference on Optical Internet 2014 (COIN)*. IEEE, Aug. 2014, pp. 1–2. DOI: 10.1109/COIN.2014.6950590.

13. Hwan Seok Chung, Seung Hyun Cho, **Changyo Han**, Sangsoo Lee, Jyung Chan Lee, and Jong Hyun Lee. "Design of RoF based Mobile Fronthaul Link with Multi-IF Carrier for LTE/LTE-A Signal Transmission". In: *2014 International Topical Meeting on Microwave Photonics (MWP) and the 2014 9th Asia-Pacific Microwave Photonics Conference (APMP)*. IEEE, 2014, pp. 303–306. DOI: 10.1109/MWP.2014.6994559.

14. **Changyo Han**, Koji Igarashi, and Kazuro Kikuchi. "Influence of Channel Misalignment of Time-interleaved DAC on Sensitivity Degradation in Coherent Optical Receivers". In: *Optical Fiber Communication Conference (OFC 2013)*. Washington, D.C.: OSA, 2013, OTh1F.2. DOI: 10.1364/OFC.2013.OTh1F.2.

15. Hongbo Lu, Kazuro Kikuchi, Changyo Han, and Yojiro Mori. "Novel Polarization-diversity Scheme Based on Mutual Phase Conjugation for Fiber-nonlinearity Mitigation in Ultra-long Coherent Optical Transmission Systems". In: *European Conference and Exhibition on Optical Communication (ECOC 2013)*. IET, 2013, pp. 522–524. DOI: 10.1049/cp.2013.1447.

16. Yojiro Mori, **Changyo Han**, Hongbo Lu, and Kazuro Kikuchi. "Wavelength Demultiplexing of Nyquist WDM Signals under Large Frequency Offsets in Digital Coherent Receivers". In: *European Conference*

and Exhibition on Optical Communication (ECOC 2013). IET, 2013, pp. 122–124. DOI: 10.1049/cp.2013.1313.

17. Ryo Minami, **Changyo Han**, Kota Matsushita, Kenichi Okada, and Akira Matsuzawa. "Effect of Transmission Line Modeling Using Different De-embedding Methods". In: *European Microwave Conference*. IEEE, 2011, pp. 381–384. DOI: 10.23919/EuMC.2011.6101839.

18. Yuki Tsukui, Hiroki Asada, **Changyo Han**, Kenichi Okada, and Akira Matsuzawa. "Area Reduction of Millimeter-Wave CMOS Amplifier Using Narrow Transmission Line". In: *Asia-Pacific Microwave Conference*. IEEE, 2011, pp. 797–800.

Patents

1. Seung-Hyun Cho, Jong Hyun Lee, Hwan Seok Chung, and **Changyo Han**. *Apparatuses and methods for transmitting and receiving control signal in analog radio-over-fiber (ROF)-based mobile fronthaul*. 2018.
2. **Changyo Han**, Minkyu Sung, Jong Hyun Lee, Hwan Seok Chung, and Seung-Hyun Cho. *Optical signal transmission system and method of allocating center frequencies of intermediate frequency (IF) carriers for frequency division multiplexing (FDM) optical fiber link*. 2018.
3. Minkyu Sung, Jong Hyun Lee, Hwan Seok Chung, Seung-Hyun Cho, and **Changyo Han**. *Analog optical transmission system using dispersion management technique*. 2018.
4. Sun Hyok Chang, Kwangjoon Kim, Hyun Jae Lee, and **Changyo Han**. *Mode division multiplexed passive optical network (MDM-PON) apparatus, and transmission and reception method using the same*. 2017.
5. Hwan Seok Chung, Seung-Hyun Cho, Jong Hyun Lee, Sangsoo Lee, and **Changyo Han**. *Control apparatus and method for monitoring optical fiber link*. 2017.

Skills

Design and prototyping	Fusion 360, Rhinoceros + Grasshopper, Blender, 3D printing (FDM, SLA), Arduino.
Coding	Python, MATLAB, C++, Java.
RF simulation	ADS, AWR, HFSS.
RF measurement skills	Experience with Keysight, Tektronix, and R&S equipments.
Languages	Korean (native), English (fluent, TOEIC score: 970), Japanese (fluent, JLPT score: 180).

Honors and Awards

Fellowships

2019–2021 **JSPS Research Fellowship for Young Scientists (DC2)**

2017–2020 **Graduate Program for Social ICT Global Creative Leaders**, The University of Tokyo.

Honors and Awards (continued)

2012–2013 **Seiho scholarship**, Seiho scholarship foundation

2006–2011 **Japan-Korea Joint Program for Science and Engineering**,
Full government scholarship both from Korea and Japan.

Awards

2020 **Honorable Mention Award** (top 5%), CHI 2020.

Interactive Demo Award (PC recommendation), IPSJ Interaction 2020.

Interactive Demo Award (audience vote), IPSJ Interaction 2020.

Best Paper Award (top 1 paper), TEI 2020.

Teaching Experience

Teaching Assistant

2011–2012 Student experiment on optical communication, **The University of Tokyo**.

Mentoring

2020 **Ryo Takahashi**, Master thesis.

Yuchi Yahagi, Bachelor thesis.

2018 **Saho Yamaguchi**, Bachelor thesis.

Academic Service

Reviewer

2020 UIST '20, Audio Mostly '20

2016 IEEE/OSA Journal of Optical Communications and Networking

2015 IEEE/OSA Optics Express

Miscellaneous Experience

Social Contribution

2019 – · · · · **Our Shurijo: Shuri Castle Digital Reconstruction Project**, Member, https://our-shurijo.org.

References

Available on Request